

Impact of Yogic Practices and Aerobic Training on Diastolic Blood Pressure among Middle-Aged Women

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Abstract—The primary focus of the study centered on evaluating the impact of yogic practices and aerobic training on the diastolic blood pressure of middle-aged women. To accomplish this goal, a group of 45 randomly selected middle-aged women, ranging in age from 35 to 45 years, were chosen as subjects. These participants were educators from various schools in Ananthapuramu, Ananthapuramu (Dist.), Andhra Pradesh, India, ensuring a consistent daily routine and forming a homogeneous group. The study chose diastolic blood pressure as the dependent variable under investigation. The selected subjects were divided into three groups: two experimental groups and one control group, each containing 15 subjects ($n = 15$). Experimental Group I (referred to as YPG) engaged in yogic practices, Group II (referred to as ATG) underwent aerobic training, and Group III served as the control group (referred to as CG) throughout the 12-week training period. Data for the dependent variable were collected before and after the training program, with measurements taken two days prior to and two days following the program. The collection involved using a stopwatch, an Electronic Sphygmomanometer, and a nose clip to measure diastolic blood pressure. The collected data from the three groups were subjected to analysis of covariance (ANCOVA) to determine significant improvements. If the F-ratio indicated significance, Scheffe's test was employed as a post hoc analysis to identify specific mean differences. The predetermined significance level for all analyses was set at a confidence level of 0.05 ($P < 0.05$). Based on the results, it was concluded that both experimental groups, namely the yogic practices group (YPG) and the aerobic training group (ATG), exhibited noteworthy enhancements compared to the control group (CG) in terms of improving diastolic blood pressure. Furthermore, the study revealed that the yogic practices group demonstrated greater effectiveness in improving diastolic blood pressure among middle-aged women compared to the aerobic training group.

Keywords: **YOGIC PRACTICES, AEROBIC TRAINING, WOMEN, DIASTOLIC BLOOD PRESSURE.**

I. INTRODUCTION

The term "Yoga" finds its origins in the Sanskrit root 'yuj,' signifying the concepts of binding and yoking [3]. It represents the profound alignment between our volition and the divine will. Our ancestral traditions have proposed eight yogic disciplines to attain the purification of the body, mind, and soul, culminating in a profound connection with the divine – these are collectively referred to as Ashtanga Yoga. In this contemporary era characterized by velocity and competition, the prevalence of stress and tension has risen significantly. Consequently, a surge in health issues associated with modern lifestyles, including obesity, diabetes mellitus, hypertension, and coronary artery disease, has ensued [1]. Aerobics is a contemporary term, yet its essence has ancient roots [4]. Aerobic activities encompass a range of exercises such as walking, jogging, and running for specified durations. These activities induce favourable transformations in the body, particularly benefiting lung function, cardiac activity, and blood circulation [7]. An aerobic exercise is one that either engages or enhances the body's utilization of oxygen. The term "aerobic" signifies "with oxygen" and denotes the incorporation of oxygen in the body's metabolic or energy-generating processes. Numerous types of aerobic exercises are conducted at moderate levels of intensity over extended periods. For optimal outcomes, an aerobic workout session involves an initial warm-up phase, succeeded by a minimum of 20 minutes of moderately to vigorously exertive exercise that targets large muscle groups. The session concludes with a cooling-down period [6].

Diastolic blood pressure characterizes the pressure during the resting phase of the heart between beats. This value, often referred to as the bottom number, reflects the pressure within the arteries during the heart's resting period between beats [5]. A standard diastolic blood pressure reading is 80 or below. A diastolic blood pressure falling between 80 and 89 is within the normal range, albeit slightly higher than the optimal range. When the diastolic blood pressure consistently

registers at 90 or above across multiple measurements, it is classified as hypertension or high blood pressure [2].

II. EXAMINATION AND INTERPRETATION OF STUDY DATA AND FINDINGS

The application of covariance analysis to the data collected for diastolic blood pressure measurements during the pre-test, post-test, and adjusted post-test phases of the yogic practices, aerobic training, and control groups is displayed in Table 1.

Table 1: Covariance Analysis for Pre-Test, Post-Test, and Adjusted Post-Test Diastolic Blood Pressure Data in Yogic Practices, Aerobic Training, and Control Groups

Tests / Groups		Yogic Practices Group	Aerobic Training Group	Control Group	SOV	Sum of Squares	df	Mean Squares	F ratio
Pre-test	\bar{X}	84.08	85.58	85.48	B	28.131	2	14.065	0.587
	σ	5.367	5.172	4.017	W	1363.58	57	23.921	
Post-test	\bar{X}	79.03	79.98	83.98	B	276.031	2	138.015	12.30*
	σ	4.05	2.78	3.01	W	638.93	57	11.208	
Adjusted Post-test	\bar{X}	79.38	79.78	83.82	B	239.47	2	119.746	14.75*
					W	454.20	56	8.110	

*Significant at 0.05 level of confidence. SOV: Source of Variance; B: Between, W: within (The Table value for significance at 0.05 level with df 2 and 57 and 2 and 56 are 3.14 and 3.15 respectively)

The statistical evaluation derived from the aforementioned table reveals that the pre-test means for the yogic practices group, aerobic training group, and control group are 84.08, 85.58, and 85.48, respectively. The calculated F ratio of 0.587 for the pre-test is lower than the critical table value of 3.14, established for degrees of freedom (df) of 2 and 57, which is necessary for significance at the 0.05 level.

Regarding the post-test data, the means for the yogic practices group, aerobic training group, and control group are determined as 79.03, 79.98, and 83.98, respectively. The computed F ratio of 12.30 for the post-test surpasses the critical table value of 3.14 for df 2 and 57, thereby attaining significance at the 0.05 level.

The analysis of adjusted post-test results indicates means of 79.38, 79.78, and 83.82 for the yogic practices group, aerobic training group, and control group, respectively. The obtained F ratio of 14.75 for adjusted post-test data also exceeds the critical table value of 3.15 for df 2 and 56, securing significance at the 0.05 level.

The cumulative interpretation of this study's analysis underscores a noteworthy distinction among the adjusted post-test means for the yogic practices group, aerobic training group, and control group. To discern the specific pairs of means with significant differences, the Scheffe's test was applied as a post hoc analysis, and the outcomes are detailed in Table 2.

Table 2: Scheffe's Post hoc Test for Disparities among the Adjusted Post-Test Paired Means of Diastolic Blood Pressure

Adjusted Post-test Means			Mean Differences	F Value
Yogic Practices Group	Aerobic Training Group	Control Group		
79.405	79.803	--	0.398	0.194
79.405	--	83.840	4.435	24.18*
--	79.803	83.840	4.037	20.10*

* Significant at 0.05 level. Table F (0.05) = 6.32

The information presented in the aforementioned table demonstrates that the average variance between the yogic practices group and the aerobic training group amounted to 0.398 (P > 0.05), accompanied by a computed F value of 0.194 (P > 0.05). When assessing the disparity between the yogic practices group and the control group, the mean difference was recorded as 4.435 (P > 0.05), with a corresponding calculated F value of 24.18 (P > 0.05). In the case of the comparison between the aerobic training group and the control group, the mean difference tallied at 4.037 (P < 0.05), while the computed F value stood at 20.10 (P < 0.05). These findings distinctly illustrate that the yogic

practices group exhibited a more favourable response to the training, evidenced by the beneficial impact on diastolic blood pressure in contrast to the aerobic training group and the control group. Additionally, the aerobic training group displayed a more favourable response when compared to the control group.

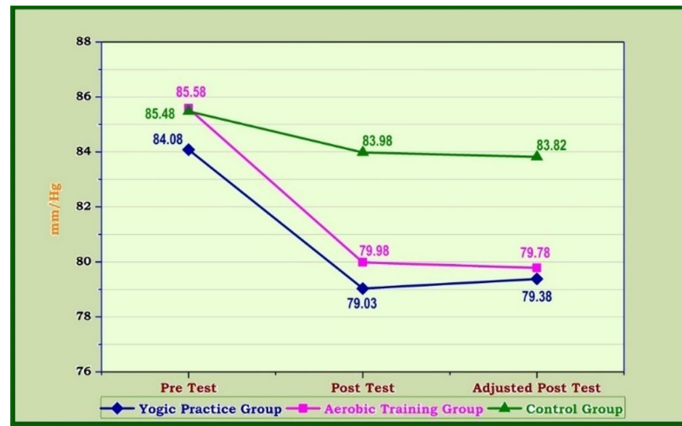


Figure 1 graphically represents the mean values of pre-test, post-test, and adjusted post-test bloodpressure across the yogic practices group, aerobic training group, and control group.

III. CONCLUSION

The study's findings led to the conclusion that both experimental groups, namely the aerobic training group (ATG) and the yogic practices group (YPG), exhibited notable enhancements compared to the control group (CG) in terms of improving the targeted diastolic blood pressure. Furthermore, it was deduced that the yogic practices group demonstrated greater efficacy than the aerobic training group in enhancing the specific diastolic blood pressure measurement. Moreover, the results indicated that the aerobic training group outperformed the control group in enhancing the selected diastolic blood pressure measurement.

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